



Publication Year	2022
Acceptance in OA @INAF	2023-07-12T15:32:32Z
Title	JUICE target regions of interest for Ganymede and Callisto
Authors	TOSI, Federico; Stephan, Katrin; Roatsch, Thomas
Handle	http://hdl.handle.net/20.500.12386/34272

Space Studies of the Earth-Moon System, Planets, and Small Bodies of the Solar System (B)
Ocean Worlds (B5.1)

JUICE TARGET REGIONS OF INTEREST FOR GANYMEDE AND CALLISTO

Federico Tosi, federico.tosi@inaf.it
INAF - IAPS Rome, Rome, Italy
Katrin Stephan, katrin.stephan@dlr.de
German Aerospace Center (DLR), Berlin, Germany
Thomas Roatsch, thomas.roatsch@dlr.de
German Aerospace Center (DLR), Berlin, Germany

JUpiter ICy moons Explorer (JUICE) is the first ESA-led mission devoted to explore the Jupiter system. It will launch in 2023 and will arrive at Jupiter in 2031, performing an extensive tour of the planet and of the icy Galilean satellites Ganymede, Callisto, and Europa. In the latest mission profile, 11 Ganymede flybys and 21 Callisto flybys are expected, before entering orbit around Ganymede in late 2034. JUICE will indeed be the first spacecraft ever to orbit an icy satellite, allowing an unprecedented analysis of its surface, interior, and tenuous atmosphere. This dedicated orbital phase will last at least 9 months and will be carried out using different trajectories and altitudes over the surface, which allows performing a complex and target-oriented observation plan. To this end, we identified several categories of regions of interest (RoI) on both Ganymede and Callisto, assigning them priorities based on the currently available geological information and on their visibility period (Stephan *et al.*, 2021). In this talk, we briefly discuss these terrain categories, illustrating the coverage expected to be achieved on Ganymede and Callisto by some remote sensing instruments. The joint analysis of multi-wavelength datasets for specific RoIs will allow shedding light on their morphology and composition. In a broader view, we emphasize the potential of some of these regions in terms of complementarity and synergies obtainable by combining data from multiple payload instruments, thus providing a "three-dimensional view" that is required for a comprehensive understanding of the physical processes taking place between the surface and both the shallow subsurface and the near-surface atmosphere.

References

K. Stephan *et al.*, *Regions of interest on Ganymede's and Callisto's surfaces as potential targets for ESA's JUICE mission*. Planetary and Space Science **208**, id. 105324 (2021).